

Comments on Snow Course Reduction in Montana by Phil Farnes 5/6/2013

During the winter of 2013, the NRCS issued a news release stating that it was discontinuing measurements at 39 manual snow courses in Montana to save money. It appears there was no coordination with the Portland office or cooperators and water users prior to discontinuing the measurements. It appears some additional snow courses were discontinued in 2012.

There were 20 snow courses recommended for conversion to SNOTEL by the Portland Forecasting staff as being important to Water Supply Forecasting efforts and 6 of those were discontinued. There were another 6 snow courses that were being used in forecasts that should be converted to SNOTEL.

Many of the discontinued snow courses were at lower elevations. Even though they do not have the highest correlation, they do represent large areas in most drainages. Years like 1977 when high elevation snowpack was below average, the lower elevation snowpack's were much higher percentagewise due to cold temperatures and many storms coming out of Canada. In 1965, lower elevations had below average snowpack but higher elevation snowpack was near record high in many drainages. Loss of lower elevation data sites prevents detection of these sorts of conditions. Also, these snow courses would be helpful in evaluating any change in the ratio of higher elevation snow packs to lower elevations as some climate change advocates suggest that the lower elevations will show the largest impact from climate change.

In past 23 years, 5 new SNOTEL sites have been installed in Montana while there were over 300 new SNOTEL sites installed in the Western US. Why the discrepancy for a State in the headwaters of the Missouri, Columbia and Hudson Bay drainages?

Apparently, there is no plan of what is needed for the future snow measurement network in Montana. There are areas that have no monitoring that may be more important in the future. In reality, there should be around 130-140 active SNOTEL sites in Montana. The snow survey network should be improved rather than be degraded when it is recognized that our water supply will become more critical in the future? More and better data will be required to accurately forecast pending runoff.

It appears there was no consideration given as to why these discontinued snow courses were established, or for whom they were established, or who is now using the data from these stations. It needs to be remembered that the Snow Survey program is a cooperative program administered by NRCS. It is not an exclusive program of the NRCS. History of individual snow courses discontinued in 2013 is shown later in this report.

Apparently, there was no consideration given to other uses for the data other than for current forecasting efforts. If snow courses were not used in forecasting equations and measured by NRCS, they were discontinued even though forecast accuracy was better when both snow course data and SNOTEL data was used in the forecast equations as opposed to using just SNOTEL

sites. The report on “A Measure of Snow: Case studies of the Snow Survey and Water Supply Forecasting Program” dated September 2010 provides some examples of different ways the data is being used and value of accurate forecasts. The NRCS should read their own report before engaging in a large-scale snow course reduction program just based on whether or not it is used in a forecast, what agency provides staff and funding for making the snow surveys.

It appears there was no consideration given to prior cooperative agreements (including one with Canada) or wording in Congressional funding relative to making these measurements when selecting those sites to be discontinued. Also, the discontinuance of these sites may be in violation of earlier funding arrangements when Congress replaced funding obtained from individual Federal agencies directly to the SCS with the requirement that SCS continue to make snow course measurements at those site being measured at that time. It does not appear that any of the cooperators or any other groups or individuals were solicited for help with the surveys prior to the snow courses being discontinued. Did USBR, BPA, USGS, USCE and other state and federal agencies, and conservation districts give their approval to the discontinuance?

Most snow courses discontinued were those measured by NRCS staff. Savings quoted in the NRCS’s news releases (\$50,000) were inaccurate and not true savings of Federal funds as most of the staff that were making snow surveys are full time NRCS employees and they are still being paid for full-time work on other projects. Local NRCS staff that measure snow have a source of data that is desired by local farmers and ranchers and can help them make more knowledgeable decisions related to the pending water supply. These snow surveyors are frequently questioned by local irrigators and others as to what they found on their last snow survey.

Many of these staff could help with winter and summer maintenance at SNOTEL sites. Sending the electronics staff out alone, particularly in the winter, is creating a chance of serious injury or death that is not worth any savings in funding.

Apparently, there has been more access restrictions placed on accessing SNOTEL sites by the USFS and BLM which has impacted the time and cost of SNOTEL maintenance. Apparently, there has been no increase in funding to cover these additional costs. New wilderness proposals have vague wording regarding access to SNOTEL and snow courses if the area becomes Wilderness.

Why is there \$18 billion in wasteful spending supported by the Federal Government (Senator Coburn’s Waste Book 2012)) and there is not enough funding available for adequate monitoring of the mountain climate that is source of the majority of Montana’s water supply as well as that of many downstream states? Why does a program that was started in this state in 1922 and has been funded for every year since then, now not have adequate funds to continue this program that provides data that is used by many federal and state agencies, cities and counties, conservation districts, individual farmers and ranchers and many other groups and individuals?

Congress needs to determine what is needed as far as a snow measuring program and then fund that program. These long-term data collection programs should not be subject to political bickering and need to be funded in such a way as to make sure the data is collected without being subject to the annual back and forth over the budget. The USGS stream gaging stations and NWS Climatological stations need to be funded in the same manner.

Comments on Individual snow courses discontinued by NRCS in 2013

Site Name (Year Established) – Cooperators/Purpose

Branham Lakes (1967), **Middle Mill Creek** (1967), and **Smuggler Mine** (1967) - Requested by Ruby Valley Conservation District for runoff and irrigation water supply assessment for streams below Ruby Reservoir, Also, used by Trout Unlimited for assessment of minimum stream flows in lower reaches of Ruby River and Jefferson River for trout fisheries.

Slag-A-Melt Lake (1968), **Abundance Lake** (1963), **Goldstone** (1948), **Mudd Lake** (1970), **White Pine Ridge** (1948), **Foolhen** (1963), **Jahnke Lake Trail** (1948), **Trail Creek** (1948) - Part of a study in 1970's to assess adequacy of snow measurements in Big Hole River drainage for US Bureau of Reclamation (USBR) operation of Canyon Ferry Reservoir. Some were snow courses established in 1948 for USBR and some were replacements in heavier snow zones for snow courses in lower elevations that were discontinued due to duplication. Higher elevation snow measurements became possible after use of helicopters became practical. Sites such as Slag-A-Melt Lake represent a large area of snow contribution from the west side of the Big Hole River Drainage. Apparently, Palisade Creek, part of the original study, was discontinued earlier even though it was a high elevation site near the headwaters of East Fork Bitterroot, Big Hole River and Upper Clark Fork River.

Picket Pin Lower (1981), **Picket Pin Middle** (1972), and **Picket Pin Upper** (1972) – Established in cooperation with MT Fish, Wildlife, and Parks Department (FWP) for studying long term effects on Platinum/Palladium mining on elk and deer herds in the area. They are also the only snow measurement sites representative of the lower elevation snowpack in Stillwater River drainage.

Gunsight Lake (1964) and **Blue Lake** (1969) - Established for forecasting inflow to Hungry Horse Reservoir for USBR after use of helicopters became practical. These areas were previously inaccessible for snow measurements due to long distances from roads.

Twin Creeks (1951) – One of the original sites established at request of USBR for forecasting inflow to Hungry Horse Reservoir.

Ashley Lake (1981) – Established in cooperation with Flathead Community College Forestry Department for training students in hydrologic measurements, Plumb Creek Lumber on changes in Ashley Lake inflow as result of timber harvest and MT FWP, Ashley Creek Water Users and City of Kalispell sewage system for operation of Ashley Lake. Original project also included snow courses at Truman Creek, Ashley Divide and Blacktail Mountain.

Berry Meadow (1962) and **Nez Perce Creek** (1967) – Berry Meadow was established for forecasting stream flow from the Boulder River and Little Boulder River Watersheds and Nez Perce Creek was a replacement for the Picnic Ground snow course that was destroyed by road construction and campground expansion. Nez Perce Creek was measured by MPCo (now PPL).

Grasshopper (1938) – One of the two longest snow water equivalent records in Smith River and Musselshell River drainages. The other site is Kings Hill and it is also proposed for discontinuance.

Mill Creek (1967) – One of the sites critical to forecasting east-side inflow of Yellowstone River between Gardiner and Livingston.

Gold Creek Lake (1949) – Mid-elevation site critical for monitoring streamflow in Upper Clark Fork, River drainage.

Notch (1963) – Established for forecasting inflow Ruby Reservoir after use of helicopters became practical. Will become more critical for forecasting inflow to Ruby Reservoir when proposed expansion of Ruby Reservoir storage is complete.

Chessman Reservoir (1936) – One of the early USGS/USCE cooperative sites in Upper Missouri River drainage where measurements remained with USGS. Valuable as low elevation site and with solid record of Jan-May first of the month measurements that can be used to evaluate any changes that may occur in ratio of low to high elevation snowpacks.

East Fork RS (1937) – Only lower elevation site in East Fork Bitterroot River Drainage and one of the longest in the Bitterroot River drainage.

Kings Hill (1934) – One of the early sites measured by USGS and funded by Corps of Engineers (Omaha) in the upper Missouri River drainage that was shifted to NRCS to improve efficiency of snow measurements with available staff.

Nez Perce Pass (1937) – One of the older sites in Bitterroot River drainage measured in conjunction with trip into Kit Carson Pasture in Idaho.

Call Road (1962) – Mid elevation site on Ruby River-Madison River divide. Useful for forecasting both Madison and Ruby River stream flow.

Carter Creek (1963) – Only site in northern portion of Beaverhead River-Ruby River divide. Site was established at request of Art Christensen and local Conservation District and was originally measured by Art.

Copper Creek (1962) - Mid elevation site in upper Blackfoot River between Copper Bottom and Copper Camp, both of which were affected by recent fires. Needs to be monitored to evaluate impact of the 1988 fires on snow measurements at the other two SNOTEL sites.

Davis Creek (1969), **Cedar Grove** (1969), and **Lost Soul** (1969) – Part of the original group of snow courses established in cooperation with Corps of Engineers –Seattle when Lake Koocanusa was being built. These sites were under international agreement with Canada for snow measurements in the Kootenai, Flathead, St. Mary's and Milk River drainages on both sides of the border.

Intergaard (1936) – Used to evaluate low elevation snowpack in vicinity of Georgetown Lake and Silver Lake for Butte Silver Bow operations on Warm Springs Creek and has one of the longest records in Upper Clark Fork River Drainage. Originally, there were two additional sites at approximately same elevations in the vicinity of Georgetown Lake but these were discontinued in favor of Intergaard.

Lake Creek (1965) – Lower elevation site in upper Madison River drainage needed to access low elevation snowpack.

Independence (1940) – Longest measured snow course in Boulder River Drainage and it is between elevations of Monument Peak and Box Canyon sites which were established in 1981 and 1979 respectively.

Rock Creek (1966) – Low elevation site needed to access low elevation snowpack in Snowy Mountains in central Montana.

TV Mountain (1956) - Mid elevation site on the Clark Fork-Jocko River divide needed to access mid elevation snowpack.

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